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ABSTRACT

This report summarizes a study of student achievement and workforce success that used data from the 1990 U.S. Census of Arizona. It focuses primarily on Hispanics and Native Americans in Arizona. Sections contained in this report are: (1) "Macro-Economic Conditions"; (2) "Educational Attainment"; (3) "Workforce Achievement"; (4) "Importance of Education to Earnings"; and (5) "Conclusion and Policy Implications." An appendix containing 8 tables. The data presented suggest that increasing educational attainment is key to reducing the earning disparities between minority and non-minority workers. Nearly half of the Hispanics and Native Americans are not high school graduates and less than 5 percent have a bachelor's degree. Students who drop out of high school average $875 to $2,200 less per year than similarly skilled high school graduates. On average, those with some college experience earn $2,500 more than high school graduates, while community college graduates earn $4,000 and college graduates earn $14,000 more. This study highlights current initiatives that focus on increasing education attainment: the School-to-Work System, the Arizona Student Achievement Program, the National Employment Leadership Council, and the Governor's Strategic Partnership for Economic Development. Five policy goals are suggested: (1) target dropout prevention programs to at-risk minorities; (2) provide greater support to community colleges for increase transfer success; (3) assist the upward mobility of the workforce; 4) expand the pool of workers; and (5) increase labor force participation. (RDG)

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ED 434 702

Arizona Minority Education Policy Analysis Center
a Policy Center of the Arizona Commission for Postsecondary Education

Minority Student Achievement and Workforce Success in Arizona
A Research Study

October 1998

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Prepared by:

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The University of Arizona

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Arizona Minority Education Policy Analysis Center (AMEPAC)

MISSION STATEMENT

AMEPAC is a policy center operated by the Arizona Commission for Postsecondary Education.

The Center's mission is to stimulate, through studies, statewide discussion, and debate, constructive improvement of Arizona minority students' early awareness, access and achievement within all sectors of education.

The Center, under the auspices of the Commission, will accomplish its mission through:

- policy research
- analysis of policy alternatives
- promotion of public discourse
- advocacy, through studies, of partnerships involving local board and institutional partnerships to improve early awareness, access and achievement
- advocacy, through studies, of policies that stimulate the responsiveness of the public school and postsecondary community to current and future public needs
- public recognition, through studies, of individuals and institutions demonstrating measurable success in implementing the Arizona Compact for Minority Student Achievement

To accomplish its mission, the Center focuses on four fundamental questions. The Center's primary activities relate to the sponsorship of reports related to these questions:

1. What does Arizona's future require of higher education in its mission to educate increasing numbers of minority students?
2. What is known and what can be learned about the effectiveness and productivity of higher education's efforts to equal educational opportunities and assistance to increasing numbers of minority students?
3. How well do current and proposed policies match individual and public needs to educate increasing numbers of minority students?
4. How successful is the state in achieving the goal, set in 1990 by its three state education governing boards, of proportional enrollments and comparable achievement for its minority students?

The Center and the Commission seek to promote wide public discussion of the future of Arizona minority student education among concerned parties including civic, community and education leaders, students, parents and leaders from government and business. The Center and the Commission seek constructive engagement of all these parties with these issues that will help shape Arizona's future through a communications strategy that includes publications, convening meetings and media strategies.

The guiding operational principles of the Center are careful, accurate nonpartisan and independent analysis; products (publications, reports) that are accessible to a lay audience; openness to discussion and debate - listening to critics as well as supporters; and a broad public interest perspective on minority student achievement issues.

The Commission is the Arizona statutory body charged with the conduct of numerous statewide, education-related activities including the study of the postsecondary education needs of unserved and underserved individuals within the State.

The data, ideas, conclusions and recommendations in this research study represent the work of the authors and not that of the AMEPAC Board of Directors or the Arizona Commission for Postsecondary Education.

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A Research Study

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Table of Contents

Preface i
Executive Summary iii
Glossary v
Introduction 1

I. Macro-Economic Conditions 2
The Changing U.S. Economy 2
Arizona's Economic Trends 2
Workforce Trends and Patterns 2

II. Educational Attainment 3
Minorities in Arizona 3
Data Description & Methodology 4
Summary Statistics 4
Impact of Background Variables on Education 5
Odds of Minority Education & Workforce Achievement Compared to the Native White Population 5
College Completion 5
High School Graduation Rates Among 11th & 12th Graders 7
Dropouts in Earlier Grades 7

Native American Educational Achievement 8
College Completion 8
High School Graduation 9

African American Educational Achievement 9
College Completion 9
High School Graduation 10

III. Workforce Achievement 11
Occupational Attainment & Ethnicity 11
Occupation, Earnings & Education 13

IV. The Importance of Education to Earnings 14
Predicted Wages 14
Lost Tax Revenues 14

V. Conclusion and Policy Implications 16

Notes 19
About the Authors 20
Appendix (Tables 1–8) 21

Preface

The Arizona Minority Education Policy Analysis Center (AMEPAC), a policy center of the Arizona Commission for Postsecondary Education, is pleased to provide you with the *Minority Student Achievement and Workforce Success in Arizona* research study, for your information and review. This research study is the major focus of AMEPAC's 1998 Fall Conferences where it will be presented to participants in Phoenix and Tucson, as well as be reviewed by a prestigious panel from business, education, media, and the community.

The data presented in this research study highlights a perplexing dichotomy: Arizona's potential for economic growth forecasts a promising future, and yet certain members of the State's culturally diverse population are not being prepared to participate in that future. Education is the key to full participation and there is clear evidence that the educational attainment of Arizona's Hispanic, African American, and Native American workers falls far short of the level needed to reap the benefits of Arizona's growing economy. The negative consequences of this shortfall will be uniquely personal for the individuals and families involved and broadly pervasive for Arizona as a whole.

Education plays a vital role in the future economic well-being of workers and society as a whole. Workers with higher levels of education earn more and they are less likely to require welfare or un-employment insurance. Most importantly, they become consumers of goods and services, and they will be able to contribute more in local, state, and federal taxes. In addition, workers with high levels of education are more likely to contribute positively to the moral fiber of the State and national citizenry. Failure to increase education levels results in lost income for individuals; lost revenue for business, industry, and government; and lost personal and societal potential.

This research study summarizes the data which document Arizona's positive economic growth. During the last two decades, there have been significant changes in the industries that fuel the U.S. economy, in the technologies that they depend on, and in the demand for new job skills which will command higher wages. Arizona's high job growth rate and low un-employment suggest that this State will continue to be in the forefront of generating new, high paying job opportunities. However, it is far from certain that Arizona's minority workforce will be ready to share in the new and better jobs of tomorrow.

For many minority workers in Arizona, the lack of educational attainment has had serious consequences: depressing their wages, forcing them into low-salaried occupations, and locking them into repetitive patterns of low socio-economic status. Currently, the wave of economic opportunity sweeping over Arizona seems very likely to pass by a sizeable portion of the State's minority population.

The *Minority Student Achievement and Workforce Success in Arizona* research study makes it clear that the lack of higher education attainment for minorities is particulary precarious for Arizona, a State in which census projections make clear that non-white citizens will soon outnumber whites. Minorities, who will soon be the State's majority population, are less likely to finish high school, less likely to enroll in college, and less likely to earn a higher education degree. True, there are some generational differences, some ethnic groups are faring better than others, and rates of high school graduation and college achievement are increasing incrementally, but the overall picture still strongly suggests that minority higher educational attainment in Arizona continues to lag. And when higher educational attainment lags, workforce opportunities become constricted, income stagnates, and personal and societal woes fed by economic insecurity gain a further foothold among Arizona's growing non-white populations.

The demographics which reflect the lagging higher educational attainment of minorities are alarming. For instance:

- Nearly half of Hispanics and Native Americans in Arizona did not graduate from high school. In fact, many did not progress beyond the ninth grade.
- Only 14 percent of African Americans, 7 percent of Hispanics, and 5 percent of Native Americans complete four years of college.
- When minority students do graduate from high school, they are likely to achieve higher levels of education at a rate nearly identical to non-minority students.

What can be done to enhance higher educational attainment among the minority groups at risk of being left out of Arizona's economic future? The critical components of such an effort include economic development, research, educational systems, early awareness, outreach of post-high school training and educational opportunities, human capital development, and widespread participation and cooperation.

Public policy and institutional activities based on informed research will result in higher educational attainment and success in the work force for all minority students and minority workers. This research study marks another first step in what must become a statewide commitment to resolve Arizona's dichotomy of a bright economic future which, without intervention, will continue to exclude major portions of the State's population. In essence, the State's economy may be in jeopardy when non-white citizens outnumber whites if these matters are not addressed in a meaningful manner today.

AMEPAC shares this research study with you in the hope that you and your business, community, and/or education sector can begin to initiate dialogue regarding ways to partner together in addressing the dichotomy presented by the paper's data. All of the citizens of Arizona deserve no less and, if positive steps are taken to address the paper's data and suggested guiding principles, will eventually benefit economically, morally, and socially.

AMEPAC and the Arizona Commission for Postsecondary Education thank the University of Arizona's Mexican American Studies and Research Center for their collection and analysis of the data presented in this research study. ♦

Alfredo G. de los Santos Jr., Chair
Arizona Minority Education Policy Analysis Center

Executive Summary

During the last two decades rapid changes in the U.S. labor market and economy have created the need for highly skilled workers. It is therefore not surprising to find that earnings growth will continue to increase for those with the best jobs and remain stagnant for those in mid- to low-level positions.

Economic trends in Arizona have been broadly positive for most of this decade—the state has enjoyed the nation's second highest job growth rate, has one of the lowest unemployment rates, ranks high nationally in growth in foreign-owned firms, and its foreign exports rose to $13.5 billion in 1997.

Unfortunately, such encouraging trends have not benefited large numbers of minority individuals in the state, and lack of educational attainment appears to be a major factor. The present study, *Minority Student Achievement and Workforce Success in Arizona*, provides a wealth of evidence that increasing educational attainment will be crucial to reducing the significant earning disparities between minority workers and those in the majority population.

Within Arizona's two largest minority groups, Hispanics and Native Americans, educational attainment is particularly precarious. According to data from the 1990 U.S. Census, approximately 48 percent of Hispanics and Native Americans in Arizona did not graduate from high school. This low level of educational achievement has, of course, a direct impact on the future economic well-being of these two groups, but also on that of every resident in the region. Other key findings on minority educational achievement are that:

- Nationally, a higher percentage of enrolled Hispanics drop out of high school, but those who do graduate are nearly as likely to attend college as non-Hispanic whites.
- Less than five percent of Hispanics and Native Americans in Arizona have a bachelor's degree.

The current study on student achievement and workforce success provides a detailed educational profile of minority populations within Arizona, and focuses primarily on Hispanics and Native Americans It isolates those factors that place these groups at greater risk in successfully completing important educational levels. From the data reviewed, it is abundantly clear that the impact of education on income is large. The information contained herein shows how failure to increase education levels actually results in lost earnings, both for individuals and the state. Important findings in this regard are that:

- Ninth to twelfth grade dropouts average between $875 and $2,200 less per year than similarly skilled high school graduates.
- Those with only "some" college experience, but without a degree, earn over $2,500 more per year. Community college graduates earn approximately $4,000 more, and those with a bachelor's degree earn, on average, $14,000 more than high school graduates.

Failure to increase high school and college graduation rates for minorities costs the state millions of dollars per year in tax revenues. But the state also loses other benefits, since workers with higher levels of education are less susceptible to layoffs, earn more, and are less likely to be on welfare or use social services.

In addition, the study highlights the current initiatives that focus on improving educational attainment and workforce success. The School-to-Work (STW) system, for example, is a network of partnerships between businesses, schools, and communities providing young people (K-12 through college) with wider choices for their future. State and national programs aimed at enhancing the skill base of the underutilized minority population include the Arizona Student Achievement Program (ASAP); the National Employment Leadership Council (NELC); and the Governor's Strategic Partnership for Economic Development (GPSED). The NELC is a coalition of CEO's from a diverse group of private-sector companies that seeks to enhance the quality of the workforce and improve the productivity and competitiveness of the nation's businesses by expanding work-based learning opportunities for students.

The Governor's Strategic Partnership for Economic Development initiative, which is an attempt to assess Arizona's business climate and its relative strengths and weaknesses, has identified primary economic foundations

on which Arizona must build its future. A partial list includes Human Resources (a quality workforce, educational and training needs); Capital; Technology; and Information and Communication infrastructure.

Underlying all of these programs, particularly those involving the public sector, is the need for systematic efforts in the area of human resource development in the state. The coordination of economic development, employee training, and educational policies and programs is necessary if the economy and the residents of Arizona are to benefit. In light of this study and current state policies aimed at minority workforce training, we suggest five guiding principles in determining the efficacy of these policies:

1. Target dropout prevention programs in K-12 to "at risk" minority populations
2. Provide more support for programs that help community college students continue on to bachelor's degrees
3. Assist the upward mobility of Arizona's workforce
4. Expand the pool of workers
5. Increase the labor force participation of the available pool of workers

The transition problems associated with higher education enrollment and graduation are noteworthy. They illustrate the multiple roles for community colleges, which include serving as entries for minorities to bachelor and graduate degree programs, technical training, skill development, and careers.

There is clear evidence that minority communities desire the positive outcomes correlated with greater educational achievement and workforce success. At the same time, education and business leaders in Arizona and the nation have recognized the need for coherent, and integrative policies regarding economic development and workforce development. Yet, "good" public policy does not automatically produce the policy goals. In the implementation stage, informed research and a thorough understanding of the institutions and decision-making processes can enable key policy makers to design a variety of specific programs that target distinct populations.

Glossary

Asian: Self-reported racial category in the U.S. Census; a person of Asian descent.

Associate's Degree: Attained a degree at a community college.

At Least a Bachelor's Degree: Completing a bachelor's, master's, Ph.D., or other post-secondary professional degree.

Background Variables: Set of individual and household variables affecting education and income. See *Individual Variables*. See *Household Variables*.

Black: Self-reported race category in the U.S. Census; a person of African or African American origin.

Children: A member in a family who is an offspring living with the head of household. Can be of any age between 16-64.

Earnings: Work income in 1989.

Education: Completed years of schooling as of 1989.

Head of Household: Person who is the head of the family.

High School Graduate: Completed high school with a diploma or has GED.

Household Variables: The variables include the education and English ability of the head of household, standardized poverty level, whether the household received any public assistance, family composition (married couple, female head of household, or male head of household), and place of residence.

Immigrant: Persons born in a foreign country, not of American parents.

Individual Variables: The variables include age, sex identifiers, English ability, pre-1980 immigrant status, whether moved to the U.S. since 1985, whether moved from a foreign country since 1985, whether worked at least eight weeks in 1989, and whether females had a child.

Mexican American: A person of Mexican descent born in the United States. Can be any race.

Mexican Immigrant: A person of Mexican descent born in Mexico. Can be any race.

Mexican Descent: A person of Mexican heritage, either born in Mexico or in the United States.

Native: Persons born in the United States or in the outlying American territories.

Native American: A person belonging to any of the Native American tribes, including Eskimos.

Other Hispanic: A person of Hispanic descent, other than a person of Mexican origin. Can be any race.

Pacific Islander: Persons of Pacific Island heritage.

Relative Probability/Odds: The odds of a minority group completing a specific grade level, relative to a native white person. For example, "-0.23" for Mexican Americans indicates that they are 23 percentage points less likely than native whites to complete that grade level.

White: Self-reported racial category in the U.S. Census, not of Hispanic origin.

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Introduction

NATIONAL studies on minority educational achievement and workforce success indicate that Hispanic, Black, and Native American students have not reached educational and occupational parity with the white non-Hispanic native population. Although these general studies contain important information on predictors of academic and occupational success, there remains a need for greater state-specific information to formulate effective educational policy interventions. This study is an analysis of minority education and employment achievement in Arizona under the latest demographic and macroeconomic conditions. As the title suggests, the links between educational achievement, labor market experience, and the future needs of the Arizona economy are examined.

The present study makes use of data in the 1990 U.S. Census of Arizona, which is the most complete source of information on the state's diverse population. The data used in this study is from a five percent sample of the state's population, as enumerated by the 1990 Census. This Public Use Microdata Sample (PUMS) provides detailed household and personal information that is unavailable in the general census.

The study is divided into five sections. The first, "Macro-Economic Conditions," summarizes national and state economic and labor trends. Sections II and III and IV constitute the main body of the study, and contain, respectively, the authors' findings on the state of minority educational attainment, workforce achievement, and the importance of education to earnings in Arizona. These sections analyze factors such as family background and ethnicity as they relate to education and employment status. Native American educational attainment in the state is analyzed separately. The last section, "Conclusion and Policy Implications," looks at several federal and state initiatives that have been created to improve education outcomes and increase the skill level of workers. Guiding principles are then suggested to determine the efficacy of such programs and policies as they pertain to minorities.

This study provides a better understanding of the occupational location of these groups as well as a better understanding of specific factors that influence educational attainment and labor force participation rates in Arizona.

I. Macro-Economic Conditions

The Changing U. S. Economy

During the last two decades there have been significant changes in the industries that fuel the U.S. economy, in the technologies that they depend on, and in the demand for new job skills. Critical workforce trends at the national and state levels are that low-skilled workers will be in competition with other similarly situated workers, both in different regions of the country and outside the U.S., and that low-skilled manufacturing jobs will continue to disappear and experience depressed wages. Advances in technology will be a major source of new jobs as well as new economic activities.

The shift from goods production to service production will continue, and automation will be a major factor in displacing low-skilled workers in manufacturing and office-related jobs. Globalization and technological advances will produce fast-paced changes in the economy and create a more volatile market. As a result, small to medium-sized firms may have an advantage in adjusting to international market effects.

Arizona's Economic Trends

From 1993 to 1998, Arizona had the nation's second highest job growth rate, up 33 percent to more than two million jobs according to the *Business Journal*. Arthur Anderson reports that the top 100 Arizona companies recorded a 10 percent increase in employee growth in 1997, compared to eight percent in 1996. Other current state economic indicators show that:

- Arizona ranks eighth in the nation for job growth in foreign-owned firms, providing 48,600 jobs, an increase of 238 percent from 1980 to 1995 according to the Organization for International Investment in Washington, D.C.

- Arizona's unemployment rate is consistently among the lowest in the nation, and at its lowest since 1970. (May 1998 — U.S.: 4.3 percent; Arizona: 4.1 percent; Metro Phoenix: 2.5 percent; Metro Tucson: 2.8 percent.)

- Arizona's exports in 1997 rose to $13.5 billion, with Mexico being the top buyer ($1.9 billion, up 21 percent); Japan was second ($1.8 billion, up 33 percent); the Netherlands third ($1.4 billion, up 160 percent); and Malaysia fourth ($1.2 billion, up 74 percent).

Workforce Trends & Patterns

Income and earning disparities for African Americans, Hispanics and other minorities will persist, with educational attainment (or a lack thereof) being a major contributor, according to *Workforce 2020: Work and Workers in the 21st Century*, published by the Hudson Institute. The authors of *Workforce 2020* write that earnings growth will continue to increase for those with the best jobs (i.e., in professional and technical occupations), and that low-paying jobs will continue to grow rapidly, with mid-level jobs (primarily in the sales and service sectors) and wage rates remaining flat. It is also predicted that:

- Workers with postsecondary education experience (attendance and degree completion) will have higher levels of earnings, income mobility, and job stability.

- A significant segment of the workforce will serve as contingent workers — those without an explicit or implicit contract for long-term employment. Professional and specialty workers as well as young, minority, female and lesser skilled and educated workers will make up this segment of the workforce. Thus, contingent workers represent segments of the labor pool with varying degrees of educational attainment.

- The dynamics of the labor market will result in workers changing jobs more frequently.

II. Educational Attainment

In her 1998 "State of the State" address to the Arizona Legislature, Governor Jane Hull said that Arizona's education system "isn't making the grade." For a great many minority students and workers in the state, the lack of educational achievement has had serious consequences, depressing their wages and forcing them into low-salaried occupations. At the same time, statewide test scores for Arizona students on the Stanford 9 improved significantly over the last year. The most marked improvement appeared in mathematics, where students scored at or above the national average and improved from last year at every grade level. The Fordham Foundation ranks Arizona science education fourth in the nation, and ranks the state's math standards fifth.

State educational leaders have recognized the need to improve academic standards, and there are a number of successful strategies in place, but at the same time there is a realization that Arizona's educational policies have failed a large segment of its students. This failure in educational policy is apparent when one takes a close look at the state's minority student population.

For Hispanics (in particular those of Mexican descent) and Native Americans, the situation is particularly precarious. National statistics reveal that:

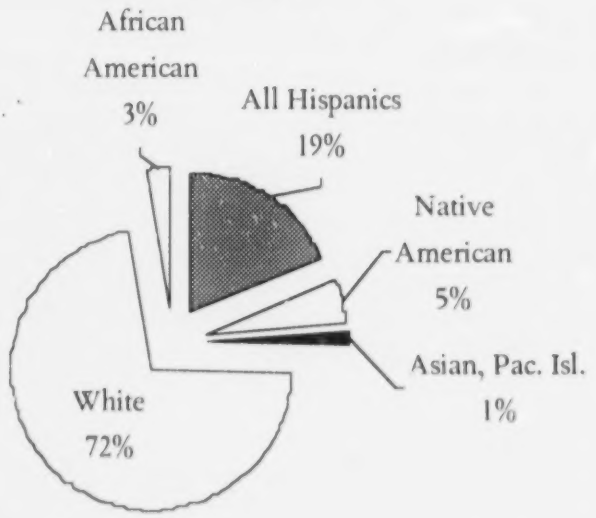
- Approximately 48 percent of Hispanics and Native Americans in Arizona did not graduate from high school.[2]
- The national high school dropout rate among Hispanics 25 years and older is 50 percent, and 34 percent for Native Americans.[3] While over half of the dropout rate observed among Hispanics is explained by the fact that many are immigrants who never enrolled in U.S. schools, the dropout rate among U.S.-born Hispanics is still significantly higher than for non-Hispanics.[4]
- Asians and African Americans in Arizona have high school graduation rates that are very similar to whites.
- Although a higher percentage of enrolled Hispanics drop out of high school, those who do graduate are nearly as likely to attend college as non-Hispanic whites.

In 1992 only 3.5 percent of Hispanic high school seniors said they did not plan to enroll in college.[5] This desire to enroll in college was second only to Asians—2.6 percent of whom did not plan to attend college—and higher than whites and Blacks.[6] While 22 percent of all whites complete at least four years of college, only 14 percent of blacks, seven percent of Hispanics, and five percent of Native Americans complete four years. Thirty-eight percent of Asians have a bachelor's degree[7] or higher.

Minorities in Arizona

Combined, Native Americans and those of Mexican-descent, make up the largest minority population in Arizona. At the same time, they are more likely to have fewer years of schooling than whites or other minority ethnic groups, such as Asians, African Americans or "Other" Hispanics—those of non-Mexican descent. For these reasons, this study highlights the educational standing of those of Mexican heritage and Native Americans relative to native non-Hispanic whites. For simplicity, unless otherwise indicated, "minorities" refers to those of Mexican descent and to Na-

Arizona Ethnic Composition
1990



Source: 1990 U.S. Census

tive Americans.

Low levels of educational achievement have a direct negative impact on economic well-being. To understand this relationship it is necessary to first examine and isolate the factors which are associated with educational achievement. Data from the 1990 U.S. Census Public Use Microdata Sample (PUMS) for Arizona allow an analysis of the conditional educational differences among ethnic groups as they are influenced by individual and household background factors.[8] Each of these categories are relevant for policy makers interested in improving the condition of minority communities in Arizona.

This study provides evidence that individual and household variables explain many of the educational differences between minority students and native-born whites. Furthermore, the study shows evidence that the educational deficit between younger minorities and whites has decreased compared to earlier generations. Accounting for demographic differences between minorities and native whites reveals several broad findings:

1. Obtaining a bachelor's degree is affected by generational status and whether minority students enroll at a four-year college directly from high school or from a community college.

2. Many minority students who reach the eleventh or twelfth grade are statistically as likely as native whites to graduate from high school.

3. The higher relative high school dropout rates among minority groups are a result of children dropping out in pre-high school grades.

After a brief description of the methodology, each of the three broad findings are discussed in greater detail.

Data Description & Methodology

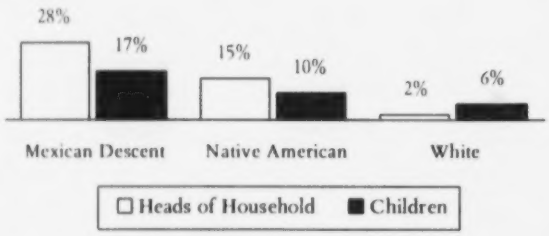
Data from the 1990 Five Percent Public Use Microdata Sample (PUMS) file for Arizona is used to answer the various questions posed in this study.[9] These data represent a random sample of five percent of Arizona's 3,665,228 residents in April of 1990. Unlike the 100 percent count of the 1990 Census, this file provides detailed household and personal information, such as ethnicity and education, which are used to examine educational outcomes beyond average statistics.

The sample analyzed consists of Arizona residents between the ages of 16 and 64 who are not enrolled in school, who are either the head of a household or the child of the head of a household. Furthermore, only those who identify their ethnicity, live in a household, or who work in the private sector, where wages are more responsive to measures of productivity, are included in the analysis.

Summary Statistics

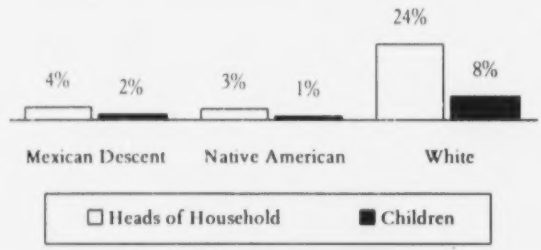
Although demographic differences between minorities and native whites contribute to educational outcomes, it is worthwhile to first describe the average education characteristics of minorities. These characteristics describe the

Percent with Less Than a Ninth Grade Education



Source: 1990 U.S. Census 5% PUMS file
See Tables 1 & 2 in the Appendix

Percent with At Least a Bachelor's Degree



Source: 1990 U.S. Census 5% PUMS file
See Tables 1 & 2 in the Appendix

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average education condition of minorities in Arizona. The following are some key average attributes of Arizona's minority population:

- Persons of Mexican descent are the largest minority group in Arizona, with Native Americans the third largest minority population.
- Mexican-descent and Native American heads of household are more likely to be concentrated at the lower end of the schooling distribution.
- Twenty-eight percent of Mexican-descent and 15 percent of Native American heads of household did not finish the ninth grade. Their children are also more likely than white children to drop out in the ninth grade. Seventeen percent of Mexican-descent children, and 10 percent of Native American children have less than a ninth grade education.
- Over 20 percent of minority heads of household drop out of school in the ninth, tenth, or eleventh grades. Minority children are also more likely to drop out in these grades than white children.
- About 10 percent of all Mexican-descent and Native American persons have at least a bachelor's degree. On the other hand, nearly one third of native white heads of household have at least a bachelor's degree.
- Mexican Americans and Native Americans have fallen behind other ethnic groups in Arizona in educational attainment.

Impact of Background Variables On Education

This section examines the effect of background factors on average educational achievement relative to native whites. The three broad findings presented in the *Minorities in Arizona* section above are discussed in greater detail in the following sub-sections. Therefore, only those results that eliminate the effects of background variables are reported in this section. The tables at the end of this report present detailed information for other education categories, as well as different background variables.[10] By eliminating the effect of background variables, it is possible to examine to what extent the educational disadvantage of Mexican-descent and Native American persons is a result of these socioeconomic differences. Some of the results below reveal that minority groups attain the same levels of education if they had the same background characteristics (individual and household characteristics) as native whites.

The *individual* variables used in the analysis are ethnicity-immigration identifiers, age, sex identifiers, English ability, pre-1980 immigrant status, whether moved to the U.S. since 1985, whether moved from a foreign country since 1985, whether worked at least eight weeks in 1989, and whether females had a child.

The *household* characteristics include the education and English ability of the head of household, standardized poverty level, whether the household received any public assistance, family composition (married couple, female head of household, or male head of household), and place of residence.

However, only in the case of the children is it reasonable to include household-level variables. As a consequence, the reported figures for children account for the effect of household- and individual-level characteristics, while for the heads of household, only individual-level characteristics are included.

Odds of Minority Education & Workforce Achievement Compared to the Native White Population

Due to the technical nature of the analysis, the results are given in relative terms, where the comparison group is native white individuals. That is, the odds of a minority group completing a particular educational level is presented relative to the native white population. For example, in the first chart on page 6—which examines the odds of attaining a bachelor's degree after completing an associate's degree—the "-0.23" for Mexican American heads of household should be interpreted to mean that a Mexican American head of household is *23 percentage points less likely than a native white* head of household to complete at least bachelor's degree after attaining an associate's degree.

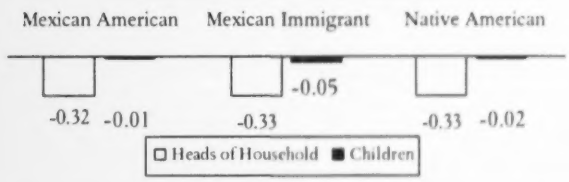
College Completion

The completion of a four-year degree for minorities is

affected by generation status (head of household versus their children) and by community college graduation. The older generation of minorities faced greater obstacles to attaining a four-year degree, such as outright discrimination by colleges or lack of preparation by their high schools. As their children have benefited from better schools and programs to enhance their enrollment in colleges, it is reassuring to find that younger minorities are more likely than their parents to attain a bachelor's degree.

Also, community college graduation is found to be an important factor in the completion of a four-year degree. There are many roads to a bachelor's degree. Traditionally, obtaining one has meant enrolling at a four-year institution directly from high school. More recently, however, an indirect path involves transferring from a community college to a four-year institution.

Odds of Attaining At Least a Bachelor's Degree After Graduating from High School
Relative to Native Whites



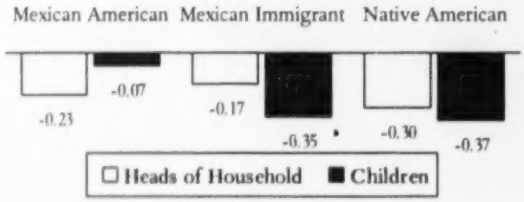
Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

Key points with respect to college completion rates are:

- Except for Mexican immigrants, minority children that graduate from high school are statistically as likely as native whites to complete an associate's degree. However, minority heads of household with a high school diploma are about 10 percentage points less likely than native whites to attain an associate's degree.
- Minorities with an associate's degree are less likely to attain a bachelor's degree than native whites.
- Minority heads of household with a high school diploma are over 30 points less likely than native white heads of household to get at least a four-year degree.
- Comparing the college completion rates of those with an associate's degree to those with a high school diploma reveals that minority heads of household are more likely to attain a bachelor's degree if they have an associate's degree than if they have a high school diploma.
- On the other hand, minority children with a high school diploma are more likely than those with an associate's degree to attain a four-year degree.

It should be noted that after controlling for background demographics, the graduation differences between

Odds of Attaining At Least a Bachelor's Degree After Earning an Associate's Degree
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

minority and white college graduation rates are smaller among children with a high school diploma than those with an associate's degree. Furthermore, these minority children are more likely to attain a bachelor's degree than minority parents who also enroll directly from high school.

While it is found that minorities are attending and graduating from community colleges in similar numbers as whites, they are not making the next educational transition to a bachelor's degree. Therefore, as minorities are more likely than native whites to first attain an associate's degree, the role of community colleges for increasing the education of minorities must be examined in future studies.

It is possible that Mexican-descent and Native American students with an associate's degree do not go on to a bachelor's degree because they have chosen a technical major, as opposed to an academic one. If minority stu-

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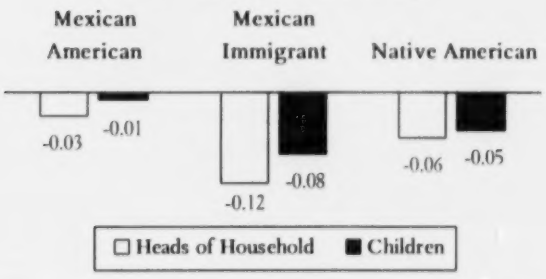
dents are more likely than whites to choose a technical degree, it would reduce the number of community college graduates who are eligible to transfer to a four-year university. As a general recommendation, however, the role of community college attendance also needs to be examined by future researchers.

High School Graduation Rates Among Eleventh & Twelfth Graders

Previous studies of Hispanic educational attainment, such as "Chicano Dropouts: A Review of Research and Policy Issues" by Russel Rumberger, focus on high school dropout rates. This part of the report finds that *after accounting for demographic differences* between minorities and native whites, minority children that *enroll* in the eleventh and twelfth grades are statistically as likely as native white children to graduate from high school. However, minority parents are still more likely to drop out than native white heads of household.

Odds of High School Graduation
Relative to Native Whites



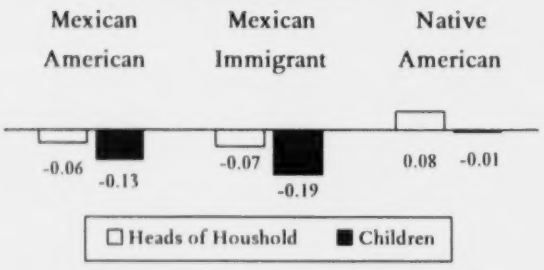
Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

Conditional on students *enrolling* in the twelfth grade, some slight differences in the high school graduation rate appear. Key points are that:

- Even after controlling for as many individual and household factors, the dropout rate is still higher in the twelfth grade for those of Mexican descent and Native Americans. However, these differences are statistically meaningful only for the heads of household—minority children are as likely as native white children to graduate from high school *if* they enroll in the twelfth grade.
- There is improvement in the dropout rate from the older generation to the younger generation—the younger generation of minority students have a lower dropout rate than their parents.
- Demographic characteristics explain the dropout rate of minority children in the twelfth grade.

The patterns described above are also observed in the transition from the eleventh grade to high school graduation. In particular, minority children are statistically as likely as native whites to graduate from high school after accounting for demographic differences, while minority heads of household are still more likely than native whites to drop out of high school in the eleventh grade even after controlling for background variables.

Odds of Completing the 10th Grade
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

Dropouts in Earlier Grades

The average statistics previously presented revealed that minorities drop out of school at various grades, and in many instances prior to the ninth grade. This section examines the relative odds that minorities complete the various grades prior to the eleventh grade. In many instances, the differences between minorities and native whites is eliminated by background variables.

The differences observed include:

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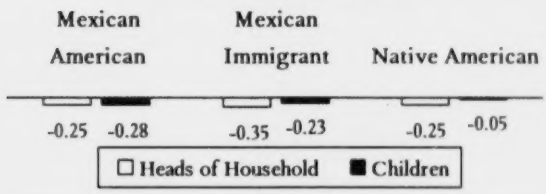
- Household factors account for the higher dropout rate of minority children.

- Mexican immigrants are particularly at risk of dropping out in the tenth grade. However, only the 16-point lower probability for Mexican immigrant heads of household in the tenth to eleventh grade transition is statistically meaningful.

- Mexican Americans and Native Americans with the same demographic characteristics as native whites are as likely to complete the tenth and eleventh grades.

Although the above statistics paint a positive picture of the educational outcomes conditional on equal social economic status and upon reaching a particular grade level, it also the case that minorities actually drop out of school in pre-high school grades in higher rates than native whites.

Odds of Completing Grades 5-8
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

Continuing the analysis in pre-high school grades reveals that background variables fail to explain the higher dropout rate in the fifth through eighth grades. In particular:

- Except for Native American children, all minority groups are approximately over 25 percentage points more likely than native whites to drop out in the fifth through eighth grades.

Therefore, *many of those without a high school diploma never enrolled in high school.*[11] Minorities in Arizona are dropping out of school at very young ages, even in the face of the mandatory school attendance laws.

Native American Educational Attainment

Native Americans are a unique minority group in Arizona because of their historically marginalized status. Although an extensive analysis is limited by the small number enumerated by the census, it is possible to examine the educational outcomes of the six largest tribes in Arizona: Apache, Cherokee, Navajo, Pima, Pueblo, and Tohono O'Odham.

These estimates are relative to native whites, and represent how more or less likely a particular Native American tribe is to complete a particular educational transition. Note that in several cases no information is available for certain Native American tribes.

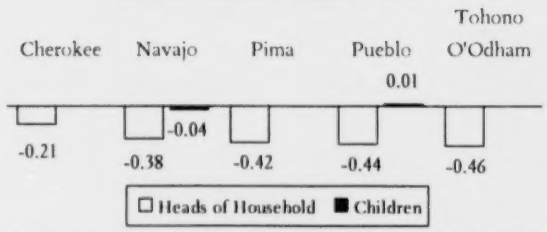
College Completion

The results indicate that tribal affiliation is associated with lower probability of successfully completion of a four-year degree. Key findings are that:

- Background variables explain the lower educational attainment of Native American children. However, individual background does not generally explain the deficit of Native American heads of household.

- Compared to native white heads of household, Native American heads of household with a high school diploma are less likely to get at least a bachelor's degree, regardless of which tribe they belong to. After accounting for background variables, Navajo and Pueblo children perform as well as native white children.

Odds of Native American High School Graduates Attaining At Least a Bachelor's Degree
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

- Heads of household of the Navajo, Pima, Pueblo, and Tohono O'Odham tribes are over 38 points less likely than whites to complete a bachelor's degree, and Cherokees are 21 points less likely.

The fact that individual variables do not change the average probability indicates the possible importance of household characteristics in explaining the educational gap between whites and Native Americans. However, the low number of actual cases of Native American children prevents a more detailed analysis of this possibility, although evidence for this hypothesis is seen among Navajo and Pueblo children.

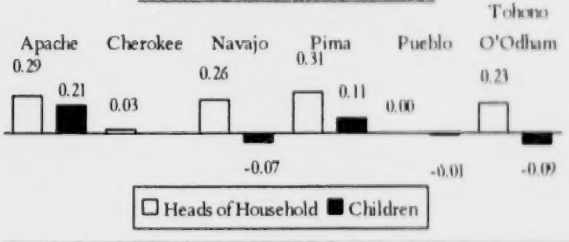
High School Graduation

A high school diploma is a pre-requisite for college attendance as well as for entry into many white-collar occupations. Key findings of the analysis of the incidence of high school dropout rates among the various Native American tribes reveals that:

- The average high school dropout rate relative to native whites varies a great deal across tribes, and is lowest among Tohono O'Odham and highest for Apache Indians.

- With two exceptions—Cherokee and Pueblo Native Americans—individual differences between Native American and native white heads of household do not account for the higher high school dropout rate in the Native American community: Apache, Navajo, Pima, and Tohono O'Odham heads of household are 23 to 31 points less likely to graduate from high school than native whites.

Odds of Native Americans Not Graduating from High School
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 5 & 6 in the Appendix

- The high school dropout rate among Cherokee and Pueblo Indians heads of household is not different from native whites after accounting for individual differences.

- Native American children, except for Apache Native Americans, are statistically as likely to graduate from high school as native white children after accounting for background differences.

- Apache students are 21 points more likely to drop out of high school even after controlling for background differences.

African American Educational Achievement

In 1990, African Americans constituted three percent of Arizona's population, and were the third most populous ethnic group, behind Hispanic and Native American persons. However, unlike Hispanics and Native Americans, African Americans are performing as well as native whites in many levels of education. This section highlights the similar outcomes of African Americans and native whites, as well as some remaining disparities between these two groups.

The data referred to in this section can be found in Tables 1-4 in the Appendix.

College Completion

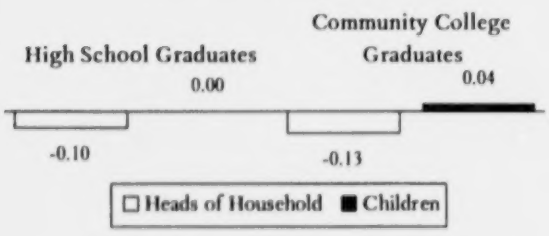
On average, 14 and two percent of African American heads of household and children, respectively, have completed at least a bachelor's degree (Tables 1 and 2). Although these figures are not as high as those for native whites (24 percent for heads of households and eight percent for children), African Americans are still more likely than Mexican-descent or Native American persons to attain a bachelor's degree.

These average differences between native whites and African Americans, however, are affected by a combination of generational and background factors. Specifically, after controlling for background factors, African American children are as likely as native whites to attain a bachelor's degree. This outcome is seen for those that enroll in a four-college directly from high school or from

a community college.

The older generation of African Americans, however, are still about 10 percentage points less likely to complete a bachelor's degree, irrespective of whether they enroll in a four-year college from high school or from a community college.

Odds of African Americans Attaining a Bachelor's Degree
Relative to Native Whites



Source: 1990 U.S. Census 5% PUMS file
See Tables 3 & 4 in the Appendix

High School Graduation

For African Americans, the odds of graduating from high school depend on whether or not they complete the eleventh grade and enroll in the twelfth grade. Once achieving this, African American children are as likely as native whites to finish high school.

The hurdle for African American heads of households is completing the twelfth grade. They are as likely as whites to complete all preceding high school grades. Even though the older generation of African Americans enroll in the twelfth grade, they are less likely than native whites to finish high school. As a consequence, Tables 1 and 2 show that 81 percent of African American heads of household, and 74 percent of African American children have a high school diploma.

For African American children, the transition from the tenth to eleventh grade is where many face the greatest obstacle to completing high school. Even after including the effects of background characteristics, African American children are 30 points more likely than native whites to drop out. Thus, if African American children are going to drop out of high school, they are more likely to do so in the eleventh grade. African American heads of household do not face this problem.

African American heads of household are at a relative disadvantage in completing grades five through eight. They are 27 points less likely to complete these grade levels compared to whites. Thus, among older African Americans, the issue of early grade retention is an important factor explaining lower rates of high school completion.

Given this data, there appear to be several grades that are problematic for African American educational achievement. These are the transition from the tenth to eleventh grade for African American children, and several earlier (late elementary/middle school) grades for African American heads of household. Younger African Americans that complete the eleventh grade are likely to attain similar education levels as native whites once demographic differences are eliminated.

Caveat

The important caveat about the findings reported in this section is the importance of removing demographic differences between minorities and native whites. In actuality, minorities do not have the same socioeconomic characteristics as native whites, and their average level of education is substantially lower than that of the majority white population. Therefore, the results stress the importance of socioeconomic characteristics in explaining this educational disparity. Eliminating these differences will go a long way towards improving the education of minorities. However, socioeconomic differences do not always explain educational differences. For this reason it is important for policy makers to look at how particular ethnic groups are affected by the education system. Policy makers should also be aware of the higher dropout rates among minority groups prior to reaching high school.

III. Workforce Achievement

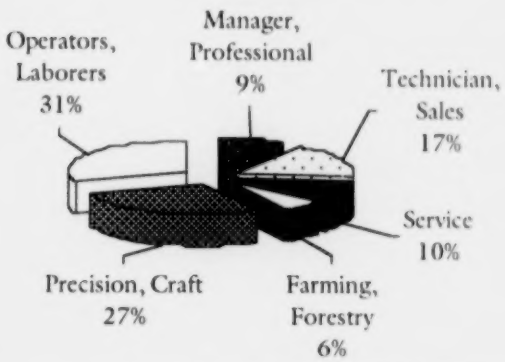
Income is a strong indicator of a person's ability to provide economic security. In the following subsections, the average wage disadvantage of minorities, relative to native whites, is described. However, the final goal is to examine the factors leading to these wage differentials. Identifying these factors will aid policy makers working to improve the economic conditions of minority groups with high poverty rates.

A portrait of Arizona's labor force is provided in Tables 7 and 8, which show occupation by ethnicity and education, respectively. For the sake of simplicity the data pertains only to male workers with calculated hourly wages between one and 200 dollars who are between the ages of 16 and 64, are employed by private firms, and not enrolled in school.[12]

Occupational Attainment & Ethnicity

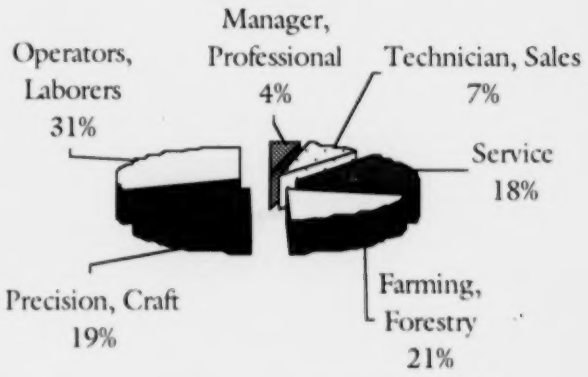
The first row for each ethnic group in Table 7 represents the distribution of that group *across* occupations, while the bottom row represents the percent of the group *within* each occupation. For example, nine percent of Mexican Americans are managers or professionals, but comprise only four percent of all managers or professionals in Arizona.

Occupations of Mexican Americans in Arizona



Source: 1990 U.S. Census 5% PUMS file
See Table 7 in the Appendix

Occupations of Mexican Immigrants in Arizona



Source: 1990 U.S. Census 5% PUMS file
See Table 7 in the Appendix

The occupational attainment of Mexican-descent and Native American workers is very different from native whites. Native whites are more likely to be in white collar occupations than minorities. Key differences in occupational attainment include:

- Those of Mexican descent constitute about 18 percent of Arizona's workforce, second only to whites, who make up about 75 percent of all workers.
- Whites are more likely than other ethnic groups to be professionals and managers. Twenty-five percent of native whites work as managers or other professionals. More revealing is the fact that 85 percent of all managers and professionals are native whites.
- Four percent of Mexican immigrants, five percent of Native Americans, and nine percent of Mexican Americans are in managerial/professional occupations.
- Over 25 percent of Native Americans and Mexican Americans are in the precision and craft field, as are 20 percent of Mexican immigrants.

The precision/craft occupations are dominated by whites, who make up 75 percent of all workers. This oc-

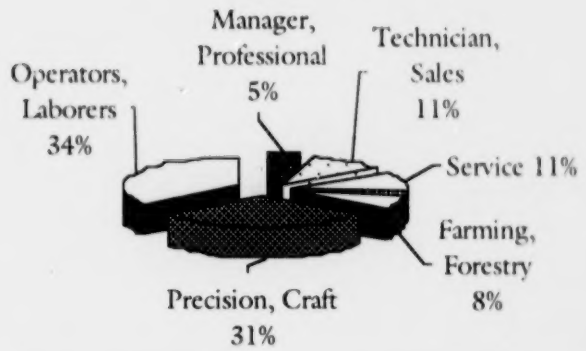
cupation is an important source of employment for certain minority groups, and is either the first or second most important occupation for Mexican Americans and Native Americans, and the third most likely occupation for Mexican immigrants.

- Over 25 percent of Mexican-descent and Native American workers are employed in operator and laborer occupations.
- In contrast, approximately 40 percent of native whites work in precision/craft and operator/laborer occupations.
- Native whites constitute the plurality of labor-intensive, low-skill workers owing to their large numbers.

The technical/sales field is the third or fourth most likely occupation in which minorities are found. In all, the service occupations are heavily dominated by white workers, who make up about 84 percent of those in the field.

While 21 percent of all Mexican immigrants work in farming or forestry-related occupations, they constitute about 41 percent of all farm workers. Mexican Americans make up the third-largest group of farm workers (16 percent). It is, therefore, not an exaggeration to say that Mexican-descent people are the mainstay of the agricultural industry in Arizona.

Occupations of Native Americans in Arizona

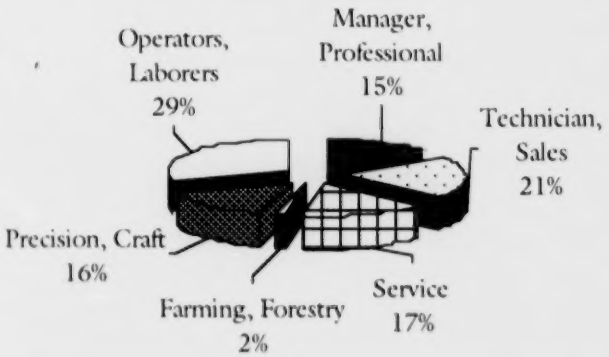


Source: 1990 U.S. Census 5% PUMS file
See Table 7 in the Appendix

- African Americans are diversely distributed across all occupations, with the exception of farming and forestry occupations.
- The preponderance of African Americans, 30 percent, are employed as operators and laborers.
- The remaining 70 percent of African Americans are almost evenly split as technicians and salesmen (21 percent), service (17 percent), precision and craft workers (16 percent), and managers and professionals (15 percent).
- Unlike Mexican-origin and Native American workers, less than 2 percent of all African Americans work in farming or forestry related occupations.

It is worth reiterating that although a great deal of African Americans are operators and laborers in similar percentage as Mexican-descent and Native American workers, over 15 percent are also working as managers or other professions.

Occupations of African Americans in Arizona



Source: 1990 U.S. Census 5% PUMS file
See Table 7 in the Appendix

In summary, Mexican-descent and Native American workers are concentrated in labor-intensive occupations, while native whites are more likely to be found in professional occupations. Even though African Americans are also likely to work in labor-intensive occupations, they

are more likely than Mexican-descent and Native American workers to be employed in white collar occupations.

Occupation, Earnings & Education

Table 8 lists the earnings and education associated with each ethnic-immigrant and occupation group. Although there is no control for such factors as age, which greatly affect earnings, this table provides a snapshot of the economic status of each group. In general, native white workers earn more than minority workers, including those in the same occupation.

It is not surprising to find that those in managerial and professional occupations earn more than workers of the same ethnicity employed in other occupations. Those in technical and sales occupations tend to be the second highest earners, ahead of those in precision and craft jobs. Service and farming jobs are the lowest paying occupations. Therefore, a key finding is that there are income differences between racial and ethnic groups in the same occupation.

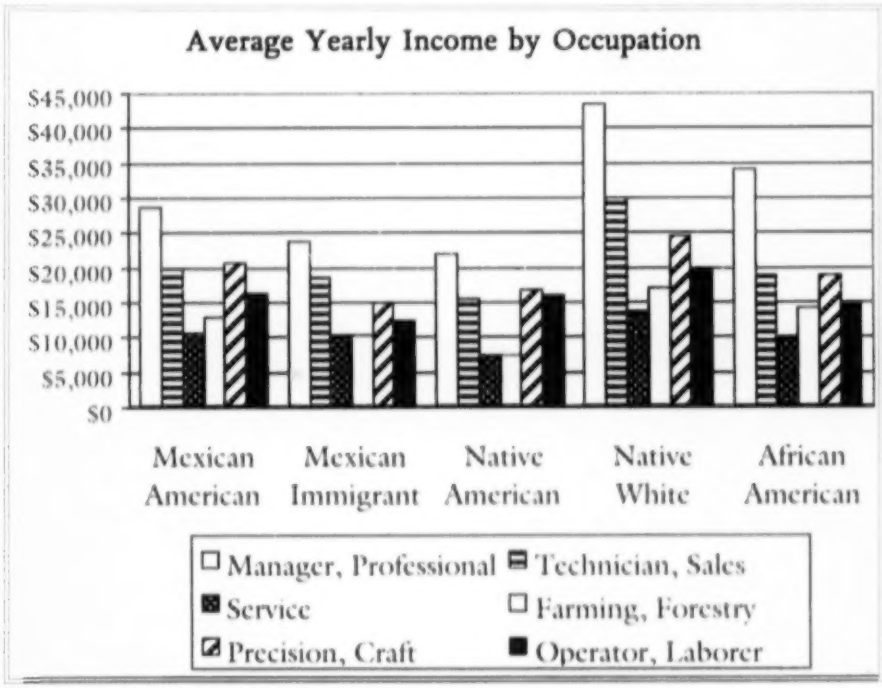
In contrast to white managers and professionals, whose average earnings exceed $43,300 and who average more than 15 years of schooling, Mexican immigrants earn slightly less than $23,500 but average 11 years of education. Similarly, Native Americans and Mexican Americans have about 13 years of education and earn an average of about $22,100 and $28,600, respectively. In between these pay ranges are African Americans, who earn slightly less than $35,000 per year. The education of African Americans managers and professions is nearly 15 years, also lower than for white managers, but higher than Mexican-origin and Native American managers. Whites are also the highest paid ethnic group in the technical and sales, service, and operator and laborer occupations.

Lastly, the least educated members of each ethnic group are farm workers.

- Mexican immigrants who are farm workers average slightly more than six years of education, while those in service occupations average 7.5 years. Persons with more education earn more and are in more prestigious occupations.
- The lowest paid groups are Mexican immigrants and Native Americans, who average only $12,800 and $14,700 per year, respectively, with farm workers being the lowest paid.
- African Americans average $18,300 per year, while native whites average $28,800.

While 21 percent of all Mexican immigrants are farm workers, which partially explains their low average annual earnings, only eight percent of Native Americans work in this occupation. Another reason for the low pay of these groups, and the general wage disadvantage of other minority groups, may be their labor force attachment (i.e., number of hours and weeks worked), and their lower hourly wage rate.

Source: 1990 U.S. Census 5% PUMS file
See Table 8 in the Appendix



IV. The Importance of Education to Earnings

Education plays an important role in the future economic well-being of workers. Highlighting the exact rewards to education may serve to motivate individual students to perform better in school, but the linkage between earnings and education also benefits the rest of the state. Since workers with higher levels of education earn more, they are less likely to be on welfare or use unemployment insurance. Most importantly, they will be able to contribute more in state and federal taxes. While a full analysis is beyond the scope of this report, the information contained herein shows how failure to increase education levels actually results in lost income for individuals as well as the government.

Predicted Wages

Figure 1 shows the lower levels of annual earnings associated with those who lack a high school diploma after accounting for the effect background variables on earnings. Important findings are:

- Ninth-to-twelfth grade dropouts average about between $875 and $2,200 less a year than similarly skilled high school graduates.

The value of a college education is clearly demonstrated in Figure 1, as those with college education earn more than high school graduates without college experience:

- Those with only "some" college experience, but without a degree, earn over $2,500 more.
- Community college graduates earn approximately $4,000 more.
- Those with at least a bachelor's degree, however, earn nearly $14,000 more than high school graduates with similar background characteristics.

Lost Tax Revenues

The fact that many Arizona workers fail to attain a high school diploma has serious public policy implications. In particular, the cost of having a less educated workforce results in decreased tax revenues. Assuming a marginal tax rate of four percent on taxable Arizona income, Figure 2 shows the yearly lost revenue per person associated with failing to graduate from high school.[11]

The lost revenue that results from not finishing high school ranges from $50 to over $100 per person. If only 2,000 individuals represented in each education group completed high school, tax revenues would have increased more than $1 million per year since 1990. With six "less than high school" education categories, this implies that for every 12,000 who complete high school, the state increases its tax revenue by over $1 million per year. Over the course of a lifetime, however, these workers will be subject to higher wage increases, less unemployment, and will be less likely to utilize public assistance. Therefore, the "$1 million for 12,000 high school graduates" figure underestimates the benefits of having a better educated workforce. Furthermore, the gains are even greater when people attend and graduate from college.

Figure 1
Predicted Annual Earnings After Eliminating the Effects of Demographic Characteristics

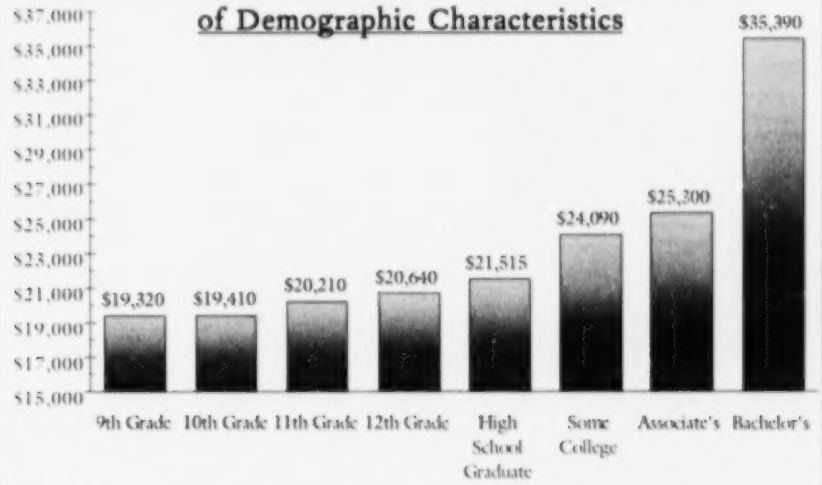
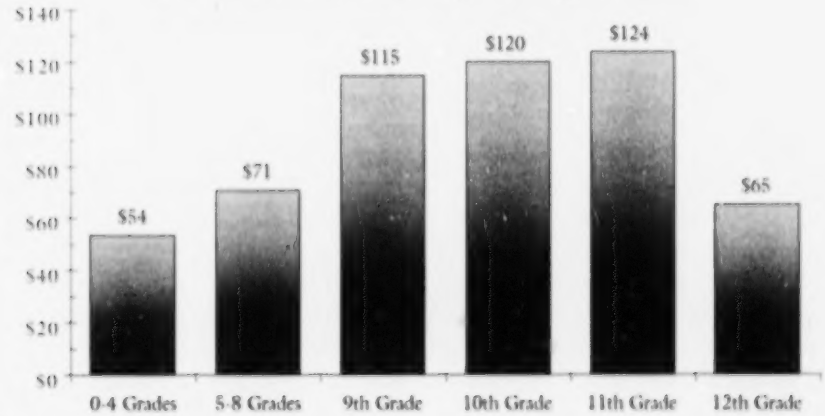


Figure 2
Lost Yearly Tax Revenues per Person Due to Failure to Complete High School



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V. Conclusion & Policy Implications

Lack of educational attainment has an enormous impact on the state and its citizens, particularly its minority populations. It depresses wages for individuals and entire groups, and significantly diminishes state revenues. Given the predicted labor market growth in the state as well as the demand for a highly skilled labor supply, there is a need to further refine economic policies in this area.

In this, the report's final section, several state and federal initiatives to improve educational outcomes, and increase workers' skill levels are noted. Guiding principles are then suggested regarding the efficacy of education and employment policies as they pertain to minorities in Arizona.

The School-to-Work (STW) system is a network of partnerships between businesses, schools, and communities providing young people (K-12 through college) with wider choices for their future. STW programs, which are in place in many states, try to reinforce academic skills and provide pertinent learning with hands-on experiences (i.e., career awareness, job shadowing, internships, career exploration and preparation). One of the major activities of the STW system is providing a database which serves as a resource for educators, students, employers, parents and other training personnel regarding job prospects, growth industries, skill requirements, and other employment-related information.

Currently, the state has several programs targeted at enhancing the skill base of the underutilized minority population. For example, Arizona has a number of initiatives and legislative actions that are directed toward educational excellence, economic development, and school-to-work transition programs. These include the Arizona Student Achievement Program (ASAP), and the Governor's Strategic Partnership for Economic Development (GPSED).

The Arizona Student Achievement Program (ASAP) represents an initiative from the Arizona Department of Education to move from essential skills to statewide academic standards. Relevant to the scope of the present study are the ASAP's nine content areas: Language Arts; Mathematics; Science; Social Studies; the Arts; Comprehensive Health; Foreign Language; Technology; and Workplace Skills. In addition to developing standards and an assessment process, the ASAP is establishing performance objectives for each of the concepts in the content areas. The development of workplace skills is an explicit recognition of the importance of educationally related abilities such as communication, organizational knowledge, and cooperative problem solving to enhance a prospective worker's marketability.

The National Employer Leadership Council (NELC), a coalition of CEO's from a diverse group of private-sector companies seeks to enhance the quality of the workforce and improve the productivity and competitiveness of the nation's businesses by expanding work-based learning opportunities for all students. The NELC's relevance to this report lies in its involvement with School-to-Work initiatives in various states. NELC members have pledged to sustain their work-based learning programs and to promote such programs in their own companies and in the larger business world.

The Governor's Strategic Partnership for Economic Development (GPSED) initiative emanated from Arizona's Strategic Plan for Economic Development, which attempts to assess Arizona's business climate and its relative strengths and weaknesses. The seven foundations identified by the GPSED are:

- Human resources (a quality workforce, educational and training needs)
- Capital
- Quality of life
- Technology
- Tax and regulation
- Information and communication infrastructure
- Physical infrastructure

Explicit in the identification of these foundations is agreement that these areas serve as the building blocks of the community and facilitate the maintenance of a healthy economic environment. The GPSED has distinguished ten economic clusters (concentrations of competitive firms in related industries) that are key for the healthy economic future of Arizona:

- Bioindustry
- Environmental Technology
- Food fiber and natural products
- High Tech
- Minerals and Mining
- Optics
- Senior Living
- Software
- Transportation and distribution
- Tourism/Experience (Recreational and visitor facilities, sports, resorts, etc.)

These industry sectors were chosen on the basis of their positive economic impact (they sell inside and outside the region, support firms that supply raw materials, components and services, create large pools of diverse workers, and attract suppliers.)

Underlying all of these programs, particularly those involving the public sector, is the need for systematic efforts in the area of workforce resource investment needs in Arizona. The intersection of economic development, research, educational systems, human capital investment, and widespread participation and cooperation are critical components for all initiatives. The coordination of economic development, workforce development, and educational policies and programs is necessary if the economy and the residents of Arizona are to benefit.

In light of this study and the current state policies aimed at minority workforce training, we suggest five guiding principles in determining the efficacy of these policies:

1. Target dropout prevention programs in K-12 to "at risk" minority populations
2. Provide more support for programs that help community college students continue on to bachelor's degrees
3. Assist the upward mobility of Arizona's workforce
4. Expand the pool of workers
5. Increase the labor force participation of the available pool of workers

Target dropout prevention programs

The first principle focuses on the educational pipeline issue that affects the future productivity and wages of Arizona's minority workforce. As both Mexican American and Native American students are at greater risk of dropping out earlier in their high school careers, school districts should develop intervention programs that identify risk factors to decrease high school dropout rates. For example, bilingual and ESL programs should be supported because they successfully transition Mexican descent students into English language fluency. Given the poverty status of many Native American students and their isolation on reservations, it is critical to assess the funding levels as well as the quality of education for predominately Native American schools.

With the current census data, school districts can pinpoint areas where after-school mentoring and tutoring programs can be developed and student success can be monitored. *It is also important to recognize that poor school districts will need additional state funding to develop and implement these programs.*

Provide more support to help community college students continue on to bachelor's degrees

The second principle focuses on the second leak in the educational pipeline, the transition point from community colleges to four-year institutions. It appears that with younger Mexican-descent students the transition to a four-year baccalaureate degree is problematic. Fixing this problem may be the first step toward eliminating lower college graduation rates among Mexican-descent students. For Native American students baccalaureate completion rates are equally problematic and require further scrutiny.

Clearly, both two- and four-year institutions of higher education should increase programs that facilitate the placement of minority community college students in baccalaureate institutions. Moreover, as many minority students in community colleges may work full time, improvements in scheduling courses as well as delivery of class material using the internet and distance learning may improve access to a university-level curriculum. In sum, continuing and improving the community college and

four-year university partnerships with targeted outreach and curricular programs may ameliorate the second leak in the minority educational pipeline.

Assist the upward mobility of Arizona's workforce

The third principle focuses on earnings growth. It is not only important to increase the supply of workers in a changing economy, but also to address the compensation associated with occupations and jobs. A supply of qualified workers should be located in high-skilled, high-wage occupations. For this to occur, the private and public sectors must invest in the successful education of all Arizonans. The findings of this report identify key junctures at the primary and secondary levels of the educational system. Dropping out of school occurs more dramatically at the later years of the primary levels, and prior to the eleventh grade. If minority students make it to the eleventh grade, their high school completion rates are comparable to white students. A key implementation recommendation for school districts is to indicate their success in retaining high risk minority students in grades 9 and 10. Schools that are successful in retention rates should be provided with an additional funding bonus. The application of the Arizona Student Achievement Program, in terms of concrete objectives and assessment, certainly needs to involve all participants in the educational process. Specifically, this serves to involve parents and students who are oriented toward high academic goals and aspirations to combine their abilities, ideas, and efforts toward common public policy goals. Educational emphasis on reading, writing, mathematical skills and understanding of mathematical principles, problem solving, and cooperative behaviors are assuredly consistent with ASAP objectives.

Expand the pool of workers

The fourth principle emphasizes human resource development. For example, the immigrant segment of the state's population is viewed popularly as an educational and workforce liability. Yet, the research findings suggest a more differentiated and complex group. That is, we have immigrants who are educationally competitive in Arizona's labor markets and enjoy positive returns for their workforce participation. On the other hand, we have many immigrants who are poorly educated and thus relegated to the lower skilled and lower paying jobs in the state. In many immigrant households, fundamental values such as respect for teachers and an emphasis on hard work can complement targeted policy efforts to improve their human resource development. One benefit of this research endeavor is that it helps policy makers understand the variations and important resources within various minority communities. Thus, the application of specific policy programs can be designed within the context and unique conditions of each group.

Increase labor force participation

The fifth principle emphasizes a greater integration of changing economic structures. That is, increasing labor force participation would mean examining the possibility of unconventional work arrangements. Home-based activities within firms can address commuting or travel issues, space considerations, technological development, work schedules, and other aspects of the employer-employee relationship. The expansion of labor force participation forces us to consider alternative work modes and arrangements that afford greater opportunities to individuals who presently encounter significant impediments.

The transition problems associated with higher education enrollment and graduation are noteworthy. They illustrate the multiple roles for community colleges, which include serving as entries for minorities to bachelor and graduate degree programs, technical training, skill development, and careers. The "fit" of technical training at community colleges to industry is an area requiring improvement. Our community college system continues to be a significant starting point for a major proportion of minority students. Yet, transition from two to four-year institutions and degree completion is much more problematic for minority community college students than for those who enter directly into Arizona's colleges and universities from high school. In the short term, at least, minority student enrollment patterns at our community colleges will not change dramatically. Thus, factors that improve successful transition — cost, financial aid, preparedness, and course scheduling and flexibility — involve the

entire state's higher educational institutions and decision-makers. In the long run, improving the proportion of minority students enrolling directly in four-year institutions should remain an important policy objective.

There is clear evidence that minority communities desire the positive outcomes correlated with greater educational achievement and workforce success. At the same time, state public policy has recognized the exigency of coherent, thoughtful, and integrative policies regarding economic development and workforce development. Yet, "good" public policy does not automatically produce the policy goals. In the policy implementation stage, informed research and a thorough understanding of the institutions and decision-making processes can enable key actors to design a variety of specific programs that target distinct populations.

Notes

1 C. D'Amico and R. W. Judy. 1997. *Workforce 2020: Work and Workers in the 21st Century*. Indianapolis, IN: Hudson Institute.

2 *Digest of Education Statistics 1997*, Table 12.

3 *ibid.*

4 *Dropout Rates in the United States, 1996*, Table 7.

5 *Digest of Education Statistics 1997*, Table 145.

6 Ganderton and Santos (1995) also provide evidence that Hispanics who graduate from high school are nearly as likely as whites to enroll in college.

7 *Digest of Education Statistics 1997*, Table 12.

8 National studies have identified these two types of variables as being important determinants for educational achievement.

9 Although the Census undercounted minorities in 1990, it is the most comprehensive data available.

10 The probability estimates are derived from a probit regression of a 1-0 dependent variable equal to one if the individual completed the higher educational level, and 0 if the lower educational level was completed. Technical details are available upon request.

11 In the case of immigrants, these results have also been found in California. Vernez and Abrahamse (1995) conclude that many of the immigrant dropouts are individuals who never enrolled in school.

12 This selection criteria avoids issues like labor force detachment, seen among women, part-time workers, and others.

13 In 1994, the marginal income tax rate in Arizona for single or married filing separately individuals with incomes between $10,001 and $25,000 was 4 percent (Advisory Commission on Intergovernmental Relations, Table 19).

About the Authors

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Adela de la Torre, an agricultural economist, is the director of the Mexican American Studies & Research Center at the University of Arizona. Her publications and research primarily focus on health care access and finance issues that affect the Latino community. She writes regularly in magazine and newspapers on contemporary issues about Latinos. She is a nationally syndicated columnist in the *Los Angeles Times*, addressing economic, political, educational, health care, and immigration issues in her commentaries. Recently, she has focused on magazine interviews of minority leader perspectives on race relations. Some of her interviews include attorney Johnnie Cochran, Congressional Hispanic Caucus Chair Xavier Becerra, and Ron Allen, President of the National Congress of American Indians.

John A. García is a professor of Political Science at the University of Arizona. His primary area of research is minority group politics. He is co-author of *Latino Voices: Perspectives of Cubans, Mexican Americans, and Puerto Ricans* (Westview Press, 1992). Among his current publications include: "The Latino and African American Communities: Bases for Coalition Formation and Political Action" in *Examining Coalitions between the African American and Latino Communities* (Yale University Press: 1998), and "Immigration and Urban Communities: A New Look into the next Millennium" in *American Cities and Suburbs: An Encyclopedia* (Garland, 1998).

APPENDIX

TABLES 1–8

Table 1

Distribution of Highest Grade Completed for Heads of Households

Highest Grade Completed	Ethnicity						
	Mexican	Other Hispanic	Native American	Asian, Pac. Isl.	Black	White	All Groups
No Schooling	4.3%	1.5%	2.9%	1.9%	1.2%	0.2%	**0.9%**
1st - 4th Grades	6.2%	2.0%	1.6%	0.9%	0.7%	0.1%	**1.1%**
5th - 8th Grades	17.0%	8.6%	9.9%	2.3%	2.6%	1.8%	**4.4%**
9th Grade	5.0%	3.3%	3.0%	3.1%	1.1%	1.2%	**1.8%**
10th Grade	5.5%	4.9%	6.8%	1.1%	3.0%	2.4%	**3.0%**
11th Grade	11.3%	9.9%	15.4%	4.8%	10.2%	5.4%	**6.7%**
High School	26.5%	25.5%	34.2%	17.4%	24.9%	26.5%	**26.6%**
Some College	15.7%	22.9%	17.7%	18.2%	34.1%	29.8%	**27.2%**
Associate's	4.4%	7.8%	5.3%	6.7%	8.6%	8.3%	**7.6%**
Bachelor's	3.0%	9.7%	2.3%	25.2%	10.0%	17.6%	**14.9%**
Master's	0.7%	2.0%	0.7%	13.0%	2.7%	4.5%	**3.9%**
Ph.D., Prof.	0.5%	1.9%	0.3%	5.5%	1.1%	2.2%	**1.9%**
Population	**92,118**	**9,817**	**16,819**	**7,592**	**15,831**	**490,415**	**632,592**

Source: 1990 5% U.S. Census Public Use File for Arizona

Table 2

Distribution of Highest Grade Completed for Children

Highest Grade Completed	Ethnicity						
	Mexican	Other Hispanic	Native American	Asian, Pac. Isl.	Black	White	All Groups
No Schooling	1.6%	0.0%	1.5%	4.3%	0.5%	0.6%	**0.9%**
1st - 4th Grades	1.2%	4.6%	0.5%	0.0%	0.0%	0.3%	**0.6%**
5th - 8th Grades	10.0%	0.7%	6.0%	3.9%	2.3%	2.7%	**4.7%**
9th Grade	6.0%	7.4%	3.1%	1.7%	2.0%	2.9%	**3.7%**
10th Grade	7.5%	5.7%	9.0%	1.0%	3.6%	7.2%	**7.2%**
11th Grade	16.4%	20.4%	21.4%	6.0%	17.2%	12.1%	**14.0%**
High School	36.8%	35.9%	41.8%	40.0%	30.6%	40.7%	**39.4%**
Some College	14.2%	19.1%	12.5%	18.2%	38.4%	21.1%	**19.3%**
Associate's	4.5%	1.7%	3.2%	0.0%	3.1%	4.9%	**4.6%**
Bachelor's	1.8%	4.7%	1.1%	18.2%	2.3%	6.5%	**4.9%**
Master's	0.1%	0.0%	0.0%	5.0%	0.0%	0.6%	**0.4%**
Ph.D., Prof.	0.0%	0.0%	0.0%	1.9%	0.0%	0.5%	**0.3%**
Population	**27,611**	**1,977**	**6,340**	**788**	**3,326**	**70,008**	**110,050**

Source: 1990 5% U.S. Census Public Use File for Arizona

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Table 3

Relative Probabilty of Completing Next Educational Level for Heads of Households

	Ethnicity and Immigration Status									
	Mexican Amer.	Mexican Immigr.	Hisp. Amer.	Hisp. Immigr.	Native Amer.	Asian Amer.	Asian Immigr.	African Amer.	African Immigr.	White Immigr.
Associate's Degree to at least Bachelor's degree										
None	-0.27 *	-0.23 *	-0.15 *	-0.07	-0.37 *	0.10 *	0.13 *	-0.16 *	0.19	-0.04
+Individual	-0.23 *	-0.17 *	-0.12 *	-0.03	-0.30 *	0.11 *	0.13 *	-0.13 *	0.18	-0.04
High School to at least Bachelor's degree										
None	-0.33 *	-0.32 *	-0.22 *	0.15 *	-0.37 *	0.25 *	0.24 *	-0.14 *	0.31 *	0.08 *
+Individual	-0.32 *	-0.33 *	-0.22 *	0.10	-0.33 *	0.23 *	0.18 *	-0.10 *	0.22	0.04
High School to Associate's Degree										
None	-0.09 *	-0.10 *	-0.05	0.20 *	-0.10 *	0.08	0.02	0.02	-0.01	0.10 *
+Individual	-0.10 *	-0.13 *	-0.06 *	0.18 *	-0.10 *	0.07	0.00	0.03	-0.02	0.09 *
12th to High School Diploma										
None	-0.04 *	-0.21 *	0.00	-0.30 *	-0.08 *	0.04	-0.14 *	-0.12 *	-0.45 *	-0.06 *
+Individual	-0.03 *	-0.12 *	0.01	-0.21 *	-0.06 *	0.05	-0.06	-0.12 *	-0.37 *	-0.05 *
11th to High School Diploma										
None	-0.09 *	-0.10 *	-0.09 *	-0.11	-0.11 *	0.01	0.07	-0.03	---	0.03
+Individual	-0.06 *	-0.02	-0.06 *	-0.03	-0.05 *	0.01	0.09 *	-0.02	---	0.04 *
10th to 11th Grade										
None	0.01	-0.08 *	0.04	-0.14	0.02	0.28	-0.26	-0.01	---	-0.20 *
+Individual	-0.03	-0.16 *	0.00	-0.22	0.00	0.20	-0.32	-0.01	---	-0.20 *
9th to 10th Grade										
None	-0.09 *	-0.25 *	0.08	-0.27 *	0.03	-0.33	-0.40 *	0.06	---	0.07
+Individual	-0.06	-0.07	0.10	-0.15	0.08	-0.31	-0.18	0.07	---	0.13
5-8th to 9th Grade										
None	-0.05 *	-0.22 *	-0.08	-0.11	-0.14 *	-0.08	0.22 *	-0.08	---	-0.04
+Individual	-0.01	-0.19 *	-0.02	-0.10	-0.09	-0.06	0.27 *	-0.06	---	0.04
0-4th to 5-8th Grades										
None	-0.19 *	-0.33 *	-0.12	-0.26 *	-0.25 *	---	-0.52 *	-0.33 *	---	-0.26 *
+Individual	-0.25 *	-0.35 *	-0.16	-0.30 *	-0.25 *	---	-0.51 *	-0.27 *	---	-0.30 *

* Underlying coefficient is significant at the 10% level.
--- Dropped because predicts one of the outcomes perfectly.

Individual variables are ethnicity-immigration terms plus age, dummy variables for sex, English ability, pre-1980 immigrants, moved within the U.S. since 1985, moved from a foreign country since 1985, worked at least 8 weeks in 1989, and if child ever born to females.

Table 4

Relative Probabilty of Completing Next Educational Level for Children

	Ethnicity and Immigration Status									
	Mexican Amer.	Mexican Immigr.	Hisp. Amer.	Hisp. Immigr.	Native Amer.	Asian Amer.	Asian Immigr.	African Amer.	African Immigr.	White Immigr.
Associate's Degree to at least Bachelor's degree										
None	-0.25 *	-0.49 *	0.14	---	-0.34 *	---	---	-0.10	---	-0.12
+Individual	-0.26 *	-0.53 *	0.12	---	-0.37 *	---	---	-0.05	---	-0.22
+Household	-0.07	-0.35	0.14	---	-0.37	---	---	0.04	---	-0.22
High School to at least Bachelor's degree										
None	-0.09 *	-0.11 *	-0.02	---	-0.10 *	0.11	0.33 *	-0.07 *	---	0.07
+Individual	-0.08 *	-0.10 *	-0.02	---	-0.09 *	0.08	0.16	-0.04	---	-0.02
+Household	-0.01	-0.05 *	-0.01	---	-0.02	0.04	0.18	0.00	---	-0.01
High School to Associate's Degree										
None	-0.01	0.06 *	-0.05	---	-0.03	---	---	-0.04	0.28	0.14 *
+Individual	0.00	0.04	-0.05	---	-0.02	---	---	-0.03	0.16	0.10 *
+Household	0.01	0.08 *	-0.04	---	0.02	---	---	0.00	0.26	0.04
12th to High School Diploma										
None	-0.04 *	-0.11 *	-0.18 *	-0.10	-0.06 *	---	0.03	-0.05	-0.19	0.05
+Individual	-0.02	-0.08 *	-0.17 *	-0.05	-0.05	---	0.04	-0.05	-0.20	0.05
+Household	-0.01	-0.08	-0.16 *	-0.08	-0.05	---	0.00	-0.03	-0.16	0.04
11th to High School Diploma										
None	-0.05 *	-0.06 *	-0.03	0.08	-0.09 *	---	-0.14	-0.14 *	---	0.06
+Individual	-0.03	0.01	-0.03	0.10	-0.07 *	---	-0.04	-0.12 *	---	0.06
+Household	-0.02	0.02	-0.04	0.10	-0.07	---	-0.04	-0.06	---	0.03
10th to 11th Grade										
None	0.08 *	-0.03	0.07	-0.14	0.10	---	---	0.27 *	---	-0.14
+Individual	0.07	-0.05	0.08	-0.25	0.11	---	---	0.27 *	---	-0.13
+Household	0.08	-0.09	0.15	-0.39	0.11	---	---	0.30 *	---	-0.16
9th to 10th Grade										
None	-0.16 *	-0.13 *	-0.21	-0.47 *	0.04	-0.33	---	-0.07	---	0.15
+Individual	-0.19 *	-0.25 *	-0.21	-0.47 *	-0.03	-0.34	---	-0.06	---	-0.01
+Household	-0.13	-0.19	-0.29	-0.42	-0.01	-0.23	---	0.01	---	0.03
5-8th to 9th Grade										
None	-0.12 *	-0.22 *	0.39	---	-0.18 *	---	---	-0.05	---	-0.20
+Individual	-0.06	0.10	0.37	---	-0.09	---	---	-0.11	---	0.06
+Household	-0.05	0.09	0.49	---	0.09	---	---	-0.03	---	-0.27
0-4th to 5-8th Grades										
None	0.13 *	-0.12 *	-0.47	---	-0.02	---	-0.29	0.04	---	-0.08
+Individual	0.09	0.02	-0.53	---	-0.01	---	0.09	0.05	---	0.13
+Household	0.28 *	0.23 *	-0.70	---	-0.05	---	---	-0.19	---	0.14 *

* Underlying coefficient is significant at the 10% level.

--- Dropped because predicts one of the outcomes perfectly.

Individual variables are ethnicity-immigration terms plus age, dummy variables for sex, English ability, pre-1980 immigrants, moved within the U.S. since 1985, moved from a foreign country since 1985, worked at least 8 weeks in 1989, and if child ever born to females.

Household variables include individual-level variables, standardized poverty level, plus dummy variables for family type, whether received any public assistance, the education and English ability of the head of household, and PUMA variables.

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Table 5

Relative Probabilty of Completing Next Educational Level for Native American Heads of Households

Education Transition	Tribe					
	Apache	Cherokee	Navajo	Pima	Pueblo	Tohono O'Odham
High School to at least Bachelor's degree						
None	---	-0.23 *	-0.39 *	-0.44 *	-0.44 *	-0.46 *
+Individual	---	-0.21 *	-0.38 *	-0.42 *	-0.44 *	-0.46 *
High School to College less than Bachelor's degree						
None	-0.23 *	-0.21 *	-0.19 *	-0.33 *	-0.04	-0.31 *
+Individual	-0.24 *	-0.20 *	-0.22 *	-0.32 *	-0.06	-0.31 *
High School Dropout						
None	0.34 *	0.04	0.33 *	0.37 *	0.02	0.27 *
+Individual	0.29 *	0.03	0.26 *	0.31 *	0.00	0.23 *

* Underlying coefficient is significant at the 10% level.

--- Dropped because predicts one of the outcomes perfectly.

Individual variables are ethnicity-immigration terms plus age, dummy variables for sex, English ability, pre-1980 immigrants, moved within the U.S. since 1985, moved from a foreign country since 1985, worked at least 8 weeks in 1989, and if child ever born to females.

Table 6

Relative Probabilty of Completing Next Educational Level for Native American Children

Education Transition	Tribe					
	Apache	Cherokee	Navajo	Pima	Pueblo	Tohono O'Odham
High School to at least Bachelor's degree						
None	---	---	-0.15 *	---	-0.08	---
+Individual	---	---	-0.13 *	---	-0.08	---
+Household	---	---	-0.04	---	0.01	---
High School to College less than Bachelor's degree						
None	-0.21	---	-0.13 *	-0.12	-0.21 *	-0.30 *
+Individual	-0.18	---	-0.11 *	-0.11	-0.22 *	-0.29 *
+Household	-0.11	---	0.12	-0.07	-0.16	-0.21
High School Dropout						
None	0.42 *	---	0.14 *	0.26 *	0.08	0.06
+Individual	0.32 *	---	0.07	0.20 *	0.08	-0.01
+Household	0.21 *	---	-0.07	0.11	-0.01	-0.09

* Underlying coefficient is significant at the 10% level.

--- Dropped because predicts one of the outcomes perfectly.

Individual variables are ethnicity-immigration terms plus age, dummy variables for sex, English ability, pre-1980 immigrants, moved within the U.S. since 1985, moved from a foreign country since 1985, worked at least 8 weeks in 1989, and if child ever born to females.

Household variables include individual-level variables, standardized poverty level, plus dummy variables for family type, whether received any public assistance, the education and English ability of the head of household, and PUMA variables.

Table 7

Distribution of Occupational Attainment in 1989

	Occupation						
	Managerial, Professional	Technician, Sales	Service	Farming, Forestry	Precision, Craft	Operators, Laborers	Ethnic Pop. (% of Pop.)
Mexican American	9.2% / 4.4%	17.3% / 7.9%	9.9% / 10.5%	5.7% / 15.3%	26.8% / 12.1%	31.1% / 15.5%	59,407 (10.2%)
Mexican Immigrant	3.9% / 1.4%	6.9% / 2.3%	17.7% / 13.6%	21.0% / 40.8%	19.5% / 6.4%	31.0% / 11.2%	43,028 (7.4%)
Hispanic American	12.6% / 0.6%	23.7% / 1.2%	15.0% / 1.7%	2.5% / 0.7%	25.7% / 1.2%	20.5% / 1.1%	6,345 (1.1%)
Hispanic Immigrant	13.3% / 0.4%	14.1% / 0.4%	14.5% / 1.0%	8.1% / 1.3%	25.1% / 0.7%	24.9% / 0.8%	3,668 (0.6%)
Native American	4.6% / 0.6%	11.2% / 1.4%	10.9% / 3.2%	7.8% / 5.8%	30.7% / 3.9%	34.9% / 4.9%	16,607 (2.8%)
Asian American	48.3% / 0.8%	19.0% / 0.3%	9.5% / 0.4%	0.0% / 0.0%	14.6% / 0.2%	8.7% / 0.2%	2,157 (0.4%)
Asian Immigrant	41.4% / 1.6%	15.9% / 0.6%	10.5% / 0.9%	0.8% / 0.2%	14.5% / 0.5%	17.0% / 0.7%	4,916 (0.8%)
African American	14.9% / 1.5%	21.3% / 2.0%	16.8% / 3.7%	1.5% / 0.8%	15.5% / 1.5%	30.0% / 3.1%	12,412 (2.1%)
Black Immigrant	12.8% / 0.1%	34.2% / 0.2%	20.8% / 0.2%	0.0% / 0.0%	8.7% / 0.0%	23.6% / 0.1%	658 (0.1%)
U.S.-born White	25.1% / 85.0%	25.2% / 81.1%	8.3% / 62.3%	1.8% / 34.3%	22.2% / 71.2%	17.3% / 61.3%	421,503 (72.1%)
White Immigrant	31.6% / 3.6%	25.5% / 2.7%	9.8% / 2.5%	1.2% / 0.7%	21.5% / 2.3%	10.5% / 1.2%	14002 (2.4%)
Total Pop.	**124,472**	**131,173**	**55,946**	**22,190**	**131,700**	**119,222**	**584,703**
% of Occ.	**21.3%**	**22.4%**	**9.6%**	**3.8%**	**22.5%**	**20.4%**	**(100.0%)**

Source: 1990 5% U.S. Census Public Use File for Arizona

Table 8

Average Annual Work Income and Years of Completed Schooling in 1989

	Managerial, Professional	Technician, Sales	Service	Farming, Forestry	Precision, Craft	Operators, Laborers	All
Mexican	$28,619	$19,557	$10,730	$12,613	$20,495	$16,361	$18,383
American	13.5	12.3	10.8	9.1	11.5	10.9	11.4
Mexican	$23,485	$18,498	$10,217	$10,025	$15,016	$12,437	$12,889
Immigrant	11.1	11.1	7.5	6.1	8.2	8.1	7.9
Hispanic	$30,896	$26,754	$14,992	$13,650	$22,095	$16,013	$21,786
American	14.2	13.2	11.9	9.2	11.8	11.5	12.3
Hispanic	$46,036	$18,085	$11,094	$10,008	$18,127	$14,343	$19,218
Immigrant	16.0	13.3	9.5	6.9	11.6	8.3	10.9
Native	$22,060	$15,310	$7,621	$7,607	$16,467	$16,052	$14,802
American	13.0	12.3	11.0	9.9	11.4	10.4	11.1
Asian	$41,187	$19,839	$14,753	---	$28,530	$17,951	$30,770
American	15.4	13.8	12.4	---	13.0	13.0	14.3
Asian	$42,429	$24,589	$13,599	$16,324	$16,562	$16,631	$28,235
Immigrant	16.3	13.5	12.4	13.5	11.4	11.7	13.9
African	$34,063	$18,788	$9,543	$13,992	$18,757	$15,030	$18,300
American	14.8	12.9	11.4	10.8	12.5	12.2	12.6
Black	$42,013	$17,824	$16,001	---	$13,764	$14,062	$19,295
Immigrant	16.1	14.3	12.9	---	13.1	12.6	13.7
U.S.-born	$43,361	$29,985	$13,756	$17,169	$24,645	$19,987	$28,849
White	15.0	13.5	12.2	12.0	12.3	12.0	13.2
White	$43,966	$27,110	$16,695	$10,026	$26,633	$19,985	$30,373
Immigrant	15.4	13.7	12.1	11.3	12.1	12.0	13.6
All	$42,093	$28,226	$12,676	$12,801	$23,057	$18,116	$25,879
	14.9	13.4	11.3	9.0	11.9	11.3	12.6

Source : 1990 5% U.S. Census Public Use File for Arizona

Arizona Minority Education Policy Analysis Center (AMEPAC)

a Policy Center of the Arizona Commission for Postsecondary Education

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